

# THE NORTHWEST PAVEMENT MANAGEMENT ASSOCIATION NEWSLETTER



*'Government and Private Agencies Working Together for Better Pavements'*

Chair - Joel Conder  
April, 1998

Vice Chair - Dave Shepard

Sec./Treas. - Vicki Griffiths  
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## PEOPLE TO CONTACT

### **NWPMA Chair**

Joel Conder (503) 365-3127

### **Vice Chair**

Dave Shepard (360) 699-2446 x1621

### **Secretary/Treasurer**

Vicki Griffiths (360) 336-9400 x239

### **NorthWest Chapter**

Callene Abernathy (360) 876-7121

### **Puget Sound Chapter**

Pat Carroll (360) 754-4580

### **SouthWest Chapter**

Bill McEntire (360) 699-2446 x1620

### **Far East Chapter**

Howard Hamby (509) 324-3458

### **SouthEast Chapter**

Matt Pietrusiewicz (509) 574-2300

### **Visual TechCom**

Bill Whitcomb (360) 696-8290

### **ADC TechCom**

Les Olsen (360) 786-5132

### **NDT TechCom**

Dave Shepard (360) 699-2446 x1621

### **Design TechCom**

Dave Nichols (360) 754-4580

### **CenterLine User Group**

Derald Christensen (253) 851-3200

### **Oregon PMS User Group**

Dennis Hughes (503) 618-2736

### **OACES**

Michael Rybka (503) 365-3127

### **TransAid and Newsletter**

Dan Sunde (360) 705-7383

Paul Sachs (360) 705-7352

John Romero (360) 705-7376

### **NorthWest T2 Center**

George Crommes (360) 705-7390

### **CRAB**

Dave Whitcher (360) 753-5989

## Words From The Chair

April is here and that means it is time for the Spring Quarterly. It is scheduled for April 9<sup>th</sup> - 10<sup>th</sup> in Vancouver. A complete agenda is included in this newsletter, but I feel it is a time to meet with other pavement managers from around the region to discuss issues important to all of us. There is an agenda, but there will be plenty of time for general discussion within the frame work of the agenda. Of importance to the NWPMA is an item of possible restructure of the Chapters. One possible solution to getting some of the Chapters going again is having "statewide" meetings via video. I took part in a recent E-board meeting in Olympia and we were able to have Spokane and Yakima County at the meeting without them having to travel to Olympia. There are sites throughout Oregon and Washington and a "test" training session will be scheduled at the Spring Quarterly for later in the Spring to test this technology. I will talk more about this in next months words section.



We will also have Bill McEntire give a presentation on Surface Treatments and when best to apply them. Bill is an "expert" in this subject and we will all learn from him. We are also going to decide if we can expand the NWPMA to include the state of Idaho. There has been many contacts with them lately and it seems logical to have them become participating members of the NWPMA. This issue will be introduced to the NWPMA at the Spring Quarterly.

I hope all of you are planning to attend the Conference. See you there!

Joel !

## Upcoming Events

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### Oregon Chapter

#### May 14, 1998

Offices of Lincoln City  
Lincoln City, Oregon

10:00am-3:00pm

Discussion Topics: To be determined

Due to the work loads during the construction season there will be a 3 month break between meetings. The following meeting is tentatively planned for August at Salem. I believe that Marion County will be into their new building by then.

Please call Dennis Hughes at (503) 618-2736 for more information.

### Northwest and Puget Sound Chapters

#### May 6<sup>th</sup> 1998

City of Renton  
3555 NE 2<sup>nd</sup> Street  
10 AM - 12 Noon

Discussion Topics: This meeting will focus on Utility Trenching. Bob Goenen of Bellevue will discuss Bellevue's current Trenching policy. Also to be presented is an update on current Utility legislation in the Washington Legislature. A flyer will be sent out at least 2 weeks prior to the meeting providing directions and a complete agenda for the day.

#### June 10<sup>th</sup>, 1998

City of Kirkland  
123 5<sup>th</sup> Street  
10 AM - 12 Noon

Discussion Topics: Subject and speaker yet to be determined.

#### July 8<sup>th</sup>, 1998

City of Bainbridge Island  
692 Highway 305 NE  
10 AM - 12 Noon

Discussion Topics: Subject and speaker yet to be determined.

### Automated Data Collection Committee

Meetings with the staff of Iowa State University were held during the week of March 16<sup>th</sup> - 20<sup>th</sup>, 1998. The editors of this Newsletter asked Les Olsen, chairperson for the sub-committee on Automated Data collection, to write an article on the current Automated Data Collection Study that is happening in Oregon and Washington. Immediately following the Upcoming Events section on the next page, is the article that Les submitted. It outlines the history of the current study and brings all of us up to date with the progress. If you are interested in assisting in the study, please call Les at (360) 786 - 5132.

## NWPMA Spring Conference

#### April 9 - 10, 1998

Clark County Maintenance Facility Conference Center  
4700 NE 78<sup>th</sup> Street  
Vancouver, WA 98665

Discussion Topics: An agenda for the Conference is on the last page of this newsletter.

### Pavement Condition Rating Workshops

Three training classes have been scheduled for Pavement Surface Condition Rating in Washington for local agencies. The dates and location are as follows

#### April 30 - May 1 Tacoma

#### May 4 - 5 Moses Lake

#### June 23 - 24 Tacoma

The classes are limited to 40 individuals. The revised Rating Manual will be used to teach the students who attend the class. To sign up for this class please call Laurel Gray at the Technology Transfer Center. Her number is (360) 705 - 7386. If you have questions about the course material call Paul Sachs at (360) 705 - 7352

### WANTED: Email Addresses

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Attention all NWPMA members!!! How would you like to receive the NWMPA Newsletter the same day in which it was created? We are currently putting together an address list for those of you who would like to receive their copy of the newsletter by email. To date, we have over 50 people who have already signed up.

Benefits to the recipient:

- receives the newsletter the same day it is created
- view the newsletter in color (when color images are present)
- create original hard copies if necessary
- forward the email to other staff
- receive quicker response back to on an item (e.g., Spring and Fall quarterly's)

Also, by using email we will decrease our reproduction and mailing costs for the newsletter.

For those of you who would like to take advantage of these benefits, please email Paul Sachs [sachsp@wsdot.wa.gov](mailto:sachsp@wsdot.wa.gov), or John Romero [romeroj@wsdot.wa.gov](mailto:romeroj@wsdot.wa.gov) to have your email address added to this list.

# AUTOMATED DATA ACQUISITION OF ROADSIDE FEATURES UPDATE

## Dual State - Automated Data Collection Committee 1998

By Les Olsen, Thurston County

Data! Data! Data! Inventory this! Inventory that! Will there ever be enough information? Are we collecting data to analyze data? The world has become information rich. We have means to collect and store data in profusion. Management wants or expects more and current data to make informed decisions on. The public realizes that data is available and are also demanding current and relevant information for a wide variety of situations. In an era of fiscal constraints and increased data reporting requirements for local governments the Northwest Pavement Management Association (NWPMA) is seeking to help assess cost saving technologies related to automated data collection of roadside features.

In August of 1995 an ad hoc committee of the NWPMA met in Vancouver, Washington to discuss the Federal Government's requirement to determine potential roadside hazards, (later to be called roadside features). The committee's makeup was from the County Road Administration Board of Washington (CRAB), Washington Association of Counties (WSAC), Oregon Association of Counties, Association of Washington Cities, Association of Oregon Cities, the Departments of Transportation of Washington (WSDOT) and Oregon (ODOT), and the Federal Highway Administration (FHWA). The committee discussed the desire and ability of vendors to collect the desired and needed roadside features in an automated test process. The test process would incorporate spatial referencing and video technologies.

Members left the initial meeting enthusiastic and overwhelmed with the potential of such a data collection evaluation. By March of 1996, regular meetings were under way to identify the scope and direction of the committee. The meetings were regularly attended by WSDOT, ODOT, CRAB, NWPMA, WSAC and FHWA. Discussions didn't go far before the magnitude of the data collection needs were evident. In Washington and Oregon there are nearly 200,000 lane miles.

The discussion of spatial coordination of roadside features by the members introduced Global Positioning Systems (GPS) as an integral part of the first meeting and as it turned out it was discussed at every meeting. It was also realized early on that much of the western portions of Washington and Oregon's roadways were tree canopied. GPS does not work extremely well under such conditions. Alternative technologies would be necessary to test and maintain spatial coordination of roadside features in the evaluation. Road videos has been a standard for many years but with the advent of computers, fast ones, greater use of digital images from videos is becoming the norm. Fast computers, wide and local area networks, and client server technology has meant easy access for many to the data. Road videos would also be evaluated.

The excitement of the committee continued to grow. Funding was an issue. Contact with the FHWA began in an effort to ferret out the viability of the proposed test, the issue of financial support, the level of financial support and the timing and breath of the financial support. These issues were all addressed over time, but it was also important to establish the specifications for the test.

By November 1996, the final draft specifications for the automated data acquisition of roadside features was ready. The committee had dusted off a previous set of proposed specifications for a similar test by NWPMA in 1994. The committee's goal was to invite vendors to demonstrate their data collection technology on typical sites in the Pacific Northwest. Along with the specifications, the committee was looking for the following from the evaluation:

Independence: The committee would engage academia to establish a statically valid test, oversee the data gathering, the analysis of the data gathered and the writing of the final report.

Accuracy: NOT being a limit to any vendor participation. The thought being there may be agencies that can't afford 1 foot accuracy, but could afford and live with 5 foot accuracy. The level of accuracy will be thoroughly discussed and documented in the final report. Readers of the report will know the level of accuracy that the vendor did achieve and the level of consistency that the vendor was able to maintain throughout the test sites.

Yardstick: Vendors will be notified of the general accuracy level under which the data is normally collected. But, again this will be general in nature. Each agency may be desirous of different accuracy levels. Projects and circumstances will dictate the level of accuracy. The committee is interested in seeing what the technology has to offer.

Statistical Validation: The committee would provide control data for a statistically valid sampling for each test site. The control data would be collected utilizing GPS and total station survey grade equipment and procedures.

Test Window: The test window would be during the months of June and July. This would allow academia the necessary time to collect the test data and analyze the data prior to the NWPMA Fall conference. Also, the local agencies would have the time to accomplish needed routine maintenance of the roads being used as test sites.

Changes along the Test Sites: At the time of the test by the vendors academia will video the sites to compare with the pre-test videos to document any significant changes to the test sites.

The specifications for the test are as follows:

The test sites shall be longer than a tenth of mile, but less than two (2) miles in length. The site will be curve-a-liner with sufficient  $\Delta X$ ,  $\Delta Y$ ,  $\Delta Z$ . The test site centerline will be horizontally and vertically coordinately controlled. The beginning of the area will be opened for GPS or inertial coordinate acquisition, the center portion may be sufficiently canopied to lose GPS satellite acquisition requiring the use of an inertial guidance system and the end will again be open for GPS or inertial coordinate acquisition. Vendors may be randomly selected to re-acquired spatial coordinates on a specific test site to demonstrate equipment repeatability.

All video and/or digital images shall be color SVHS quality or better. All images shall be collected in lane miles. All images shall be spatially coordinated increasing and decreasing mile posting for each road test segment. All images shall provide a line of travel perspective, at a minimum least, from centerline right to right of way limit. Digital images shall be captured at 1000ths of a mile interval minimum. Each video image and/or frame shall be cataloged by road name, date, time, (X,Y,Z) and mile post.

The test will require each vendor to demonstrate their production and/or prototype vehicle mounted equipment ability to coordinate (X,Y,Z) all road and roadside features along the test site length. X and Y coordinates shall be in coordinated in latitude and longitude convertible to North American Datum of 1983, adjusted in 1991 [NAD83 (1991)] upon delivery. The Z coordinate shall be National Geodetic Vertical Datum of 1929 (NGVD 29) based on mean sea level. All road and roadside features visible within the video shall be coordinated (X,Y,Z) in real-time or post processed the datums fore mentioned.

It is preferred that all processed road and roadside features be accomplished, at the vendor's production level, on current state of the art PC hardware and all software operating under Windows 957 software environment. Proprietary hardware and software will also be considered.

#### TEST CRITERIA:

Test sites shall test for the following :

Camera;	field of view, clarity of image, aperture response and zoom
Video;	incorporation of road name, mile post, DMI reading, and clarity of
Digital Image;	incorporation of road name, mile post, DMI reading, and clarity of digital image, spacing of images, sequencing of images, i.e. travel lanes
Spatial Coordination:	Coordinate acquisition gain and/or loss, relative Vs/absolute accuracy, coordinate repeatability
General Information:	Supports 32 bit architecture, Integration with SQL compliant data systems, Ethernet compliant

#### BENEFITS

The proposed test will explore commercial application for effectively and efficiently collecting and analyzing roadside inventory data for local governments. Such data is desired and needed to meet federal, state and local funding requirements, making data collection a major ongoing local government task. A general cost rule for data collection is that 80% of the total cost of a data set is the cost attributed to data collection.

With the states of Washington and Oregon having in excess of 200,000 lane miles of local government roadways, the continued enhancement of automated data capture techniques, the ability to integrate measurement devices and to analyze and project future costs are paramount to the viability of local government in the year 2000 and beyond. It is essential for managers and staff to have data and tools which allow the analyzing of problems and needs, to formulate solutions and systems, to evaluate in-house and/or commercial options, to develop and implement work strategy and to evaluate the performance and outcome.

The prime benefit of the proposed testing will be to; show that automated data capture technology has come of age; that commercial vendors can demonstrate the feasibility and effectiveness of video technology coupled with Global Positioning Systems (GPS) and/or Inertial Survey System (ISS) technologies for the collection and spatial referencing of roadside features; that said technology can be efficient and cost effective proving local

government officials, managers and staff with the right information, at the right place and time.

In October and November of 1996 the committee reviewed several academic institutions for their credentials to administer the test. Iowa State University came highly recommended based on their past work on similar projects with the Iowa State Department of Transportation. Upon review of the Iowa State University (ISU) team of Ed Jaselski, Ph.D., Kandiah Jeyapalan, Ph.D., Duane Smith and Tom Maze, Ph.D. Director of the Center for Transportation Research and Education (CTRE) the committee unanimously selected ISU as the academia of choice.

In December of 1996 the committee with the technical support of FHWA transmitted the test specifications to the Northwest FHWA District Office in Portland for processing. On September 22, 1997 WSDOT, TransAid Office received word that FHWA had funded the test with a \$100,000 grant. FHWA had several minor concerns. They were quickly put to bed and now the real work could began.

ISU signed the contract and mailed it to WSDOT, Research Office. The Research Office will administer the contract. Keith Anderson is the contract administrator. ISU and the committee begin work on the prioritization of the data elements. The elements came from Washington's County Road Information System (CRIS) and Oregon's Integrated Road Information System (IRIS). ISU had the committee members rate the 34 elements from 1 to 5. All elements with a rating of 3 and higher will be used in the test criteria. The final criteria list of elements are not yet completed. Brandon Stephan the ISU graduate student is working on the priority array.

During the week of March 16th through the 20th ISU visited the 25 test sites in the Portland/Vancouver Metropolitan area. The sites were videotaped by Ed Jaselski and Brandon Stephan. The sites were graded using the first phase of the prioritization array. Of the 25 sites 8 were selected for the test. It was felt that the vendors could collect the necessary data on the 8 sites in one day. The final site selection and mileage will be completed by April 1st by ISU.

The present schedule is with completion dates in parenthesis:

Advertise the test and mail to the known vendors (April)  
Notify the test site jurisdictions and Utility Coordination Councils (April)  
Pretest meeting with the vendors (May)  
Conduct Test (June - July)  
Post Process Data (June - September)  
Analysis of test results (September)  
Preliminary write up (October)  
Presentation to the NWPMA Fall Conference (October)  
Final Report (December 31, 1998)

There are presently 12 vendors that possibly perform the specified data collection. Advertising may glean an additional 4 or 5. It is not yet known the number of vendors that will participate in the test. The vendor's cost to participate in the test is directly related to the distance from the Portland, OR area. The potential benefits to the vendors could be overwhelming. The committee and ISU are excited and encouraged by the possibilities of this test. The test results will provide answers in the collection and presentation of roadside features inventory through the application of existing, emerging, and transferable technologies. Presently, no such testing is being undertaken on behalf of local governments elsewhere in the nation.

Teaming with FHWA will assist local governments nationwide in leadership and cooperation in the area of pavement management and automated data collection. Collaborative efforts such as this will certainly establish direction and tone of the NWPMA in its aide to local governments regionally and nationally. Clearly the test results can be very advantageous to local governments in an era of fiscal constraints and increasing data reporting requirements.

## Topics & articles needed for the Newsletter

We are always looking for ideas of what you would like to see in the Newsletter. If you have a pavement management experience that you would like to highlight to the rest of the NWPMA, please call us and we will discuss how we can adjust it to fit in the Newsletter. In particular, we would like to showcase how local agencies are using pavement management to improve their day to day practices. These type of articles act as catalysts for other local agencies as they offer ideas that may not have been thought of.

Also, if there are topics of interest that relate to pavement management that you would like to see within the Newsletter, let us know. We would like to see the Newsletter adapt to the needs of the NWPMA. This month we had the previous article submitted by Les Olsen of Thurston County. If there are other articles similar to this one you would like to appear in the newsletter, please let us know. If you are interested in writing an article or have an idea for an article or additional topics please call Paul Sachs at (360) 705-7352.

## NWPMA Web Page

Looking for Pavement Information? Or are you looking for information on the NWPMA Fall Conference or the 4<sup>th</sup> International Conference on Managing Pavements? The NWPMA Web Page is your easy answer to any of the above questions. The current address for the NWPMA Web Page is:

<http://www.wsdot.wa.gov>

Once you are on the WSDOT Home Page, scroll down the page until you get to the TransAid Service Center Section. Click on the TransAid site and once the TransAid site has loaded click on the Mgmt Systems area on the TransAid

Header. This will bring up the Management Systems section. On the left side there is a heading:

NWPMA

Click on this and the NWPMA HomePage will appear. It will begin to change over time and we are looking to you to assist us. Are there things you would like to see in your homepage. Please E-mail Paul Sachs at [Sachsp@wsdot.wa.gov](mailto:Sachsp@wsdot.wa.gov) if you have suggestions or call him at (360) 705 - 7352.

The TransAid Management Systems homepage has other areas that you might be interested in. For instance, there is a section devoted strictly to pavements. Or if you are interested in Safety management, there is a section devoted to that topic. Surf the homepage and let us know what you think.

Like with the NWPMA homepage we are always looking for suggestions on what you would like to see.

If you are not hooked up to the Internet yet and are a Washington city who has yet to take advantage of TransAid's Internet package grant program, please call John Romero at (360) 705 - 7376 for more information.

### NORTHWEST PAVEMENT MANAGEMENT ASSOCIATION NEWSLETTER POLICY

In an effort to communicate and advance the goals of the Northwest Pavement Management Association (NWPMA), a newsletter shall be published on a regular basis for distribution to the membership. The newsletter shall act as an open forum to communicate and exchange information consistent with the NWPMA goals within the following general policy guidelines:

#### Articles

Any article of interest to the membership may be printed. Articles should generally pertain to the construction, reconstruction and/or maintenance of pavements or the activities of the NWPMA. All members are encouraged to submit news articles for publication.

#### Advertising

No advertising by vendors or consultants will be allowed. Vendors and consultants will be listed in the Calendar of Events portion of the newsletter.

Any special circumstances requiring consideration of an exception to the above guidelines will be discussed on a case-by-case basis between the editor and the NWPMA chair.

This policy was adopted on December 10, 1996.



# *Spring Quarterly Agenda*

## **April 9**

10:30 - 12:00	E-Board Meeting - including Chapter and Committee Chairs
1:00 - 1:30	Introductions - Other topics you would like to discuss - Dave Shepard
1:30 - 2:00	Restructure of chapters and committees and admission of Idaho - Joel Conder
2:00 - 2:30	Break
2:30 - 4:00	TransAid Activities in PMS - Paul Sachs and Group Discussion
	Newsletter NWPMA Web Site PMS Training Classes Video Conference Training Production of Revised Condition Rating Manual Jump Start to develop new Deduct Curves Update on the Management System Grant Program ISTEA Update Other Items
4:00 - 4:30	CRAB Activities in PMS- Dave Whitcher and Group Discussion Update on Mobility Other Items

## **April 10**

8:00 - 8:30	Washington State Technology Transfer Center - Dan Sunde
8:30 - 9:00	Update on Statewide implementation in Oregon. - Mike Rybka
9:00 - 10:00	ASTM Data Collection - How does it compare to NWPMA? - Paul Sachs
10:00 - 10:20	Break
10:20 - 12:00	Surface Treatments - When to apply and how long should they last - Bill McEntire
12:00 - 1:00	Lunch
1:00 - 2:00	PMS to access Utility Fees - Cutting and Patching Streets?
2:00 - ???	Various Topics brought up by group

These are the phone numbers of the two places located at the Vancouver Mall,

Holiday Inn Express (360) 253-5000, and

Comfort Suites (360) 253-3100.

**WE WANT TO ENCOURAGE GROUP DISCUSSION FOR ALL SESSIONS**